AUDIO FILE

Mutec MC-3+ USB

Many audiophiles – including us at *HFN* – believe USB, while convenient, plays second-fiddle to S/PDIF in sound. Does pro-brand Mutec have the answer?
Review: **Andrew Everard** Lab: **Paul Miller**

hi-finews OUTSTANDING PRODUCT

So you've got your head around all this 'computer audio' stuff: you've ripped or downloaded all your music to a computer, NAS or USB hard drive, and you're all ready to connect your PC or Mac to a DAC or the digital input on your amp, sit back and enjoy the music. Then someone says 'Hang on – what you really need to complete your system is a little black box with lots of lights on it, most of the functions of which you'll probably never use, but which will make your system sound much better, honest.'

You'd be right to be cynical: after all, the world of hi-fi isn't exactly short of 'magic black boxes', and that's just what the £800 Mutec MC-3+ USB seems to be at first glance – especially if you adhere to the mantra that 'digits is digits' and its logical conclusion that the connection between your source and your DAC is either there and perfect, or not there at all. However, look a bit closer and the MC-3+ USB starts to build a case for itself, not least because it comes from a German company with no hint of new age flat-earth hi-fi mysticism about it, but rather a very respectable history in pro audio and video.

A SMART COOKIE

There's more on the background to this company in the Mutec Masterclass boxout below – but those pro roots go a long way to explaining not only the range of inputs and outputs on the back of this little black

box, but also its seemingly over-generous features and functions.

So what is the MC-3+ USB? Well, Mutec describes it as a 'Smart Clock' and, for the purposes of this review, that's as good a description as any. What it does, at least in the context of a normal audio system, is take a digital signal, re-clock it via a precise internal master clock, and then output it to your DAC in a cleaner form than was fed in.

The company sums it all up by suggesting the MC-3+ USB makes its improvements by acting 'first as an ultra-low jitter clock with industry-leading precision and noise performance, and secondly by aggressively re-clocking incoming digital audio signals [using] Mutec's proprietary 1G-Clock technology'.

In the process, it can also offer sample rate and format conversion. This includes downsampling and also converting DSD streams, input natively or as DSD over PCM frames (DoP) at up to 11.2MHz and down to DAC-friendly 176.4kHz, so that even

older DACs can handle these new-fangled formats. This latest MC3+ also includes a galvanically-isolated USB input for asynchronous connection to a PC or Mac, and a range of digital outputs from S/PDIF (coaxial and Toslink optical) through to the XLR-connected AES/EBU standard.

So what are all those other sockets and lights for? Well, they're likely to be of marginal use in domestic systems, but they let the MC-3+ USB act as an external clock generator for other digital devices, or indeed be slaved to even more accurate master clock references. In a studio environment, where multiple digital devices may be used in a production chain, that enables them all to be slaved to one master clock, so they are, so to speak, all 'singing from the same hymn-sheet' in the cause of jitter-elimination.

🎵 NOT JUST FOR THE PROS

While the MC-3+ USB looks somewhat over-engineered for domestic duties, it can still make a significant difference to the sound of a digitally-biased hi-fi system. Indeed, I've had this Mutec device in my equipment rack, alongside my stripped-down Mac mini computer and usual Naim DAC, for many months. I've tried it out with all the DACs and digitally-equipped amps I've reviewed in *HFN* and feel it's typically had a beneficial effect on the sound, more than rivalling the USB inputs on those DACs providing this facility.

ABOVE: A forest of green, red and blue LEDs indicates the clock mode, clock reference, output and multiplication (data and clock) from x1, x2, x4 through to x8 and x256/x512 for DSD

MUTEC MASTERCLASS

Berlin-based Mutec has built its reputation in perhaps the most demanding – and sceptical – sector for any audio company: the pro market. Studios and engineers tend not to be seduced by stylish casework or outlandish claims, but instead have a 'put up or shut up' attitude to new equipment. Mutec addresses this directly with a range of products in functional rather than flashy cases, and an emphasis on performance and value. The MC-3+ USB is a development of the original MC-3+, the latter appealing to those using conventional digital sources rather than computers, especially as it sells for ~£200 less than the USB version. Other units in the MC-3 range add high-precision clock generation and distribution for video signal chains, for use in video editing and the like, while beyond this the company offers even higher-specification models such as the 'iClock', designed for use in broadcast audio/video mastering and duplication.
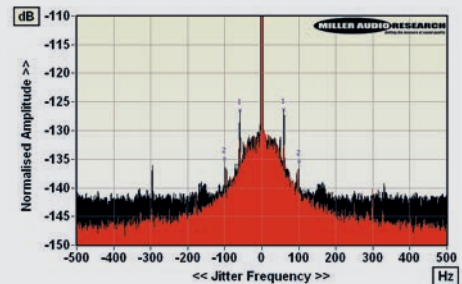
ABOVE: Socketry accommodates dual Word clock(s), AES3 and S/PDIF digital ins and outs on BNC, S/PDIF outs on RCA coax and Toslink optical, balanced AES/EBU in and out on XLR plus the addition to this latest MC-3 model – a USB 2.0 interface

In fact, I have to admit my initial interest in this device was as a means of connecting my 'music computer' to my usual DAC, which has no USB input, but having used it for considerably longer than most review products, I'd say its appeal is not just to those looking to add a 'USB input' to their DAC, but also as an add-on for just about any converter out there.

It's not just the greater clarity it brings with recordings as diverse as The Stones' *Blue & Lonesome* [Rolling Stones Records 571 494-2; 96kHz/ 24-bit] and Tamsin Waley-Cohen's set of Harris and Adams Violin Concertos [Signum Records SIGCD468; 96kHz/24-bit]. With the MC-3+ USB in the digital chain the sound is just more vibrant, the soundstage more focused and three-dimensional and – on the blues set in particular – the bass is both better resolved and possessed of a more convincing weight.

This 'just more real' effect is especially noticeable with solo instrumental and small-ensemble recordings such as Dinosaur's

> ## 'Its appeal goes far beyond adding a USB input to a DAC'

Together, As One [Edition Records EDN1078; 96kHz/24-bit], where every strand of the recording is simply better defined and has greater timbral conviction, making the music both easier to enjoy and more involving.

AN INSTANT UPGRADE
Indeed, I'd go so far as to suggest that with Mutec's re-clocking device in use, the performance of my Mac mini/Naim DAC combination, the former running Audirvana Plus and the latter component used with the 555PS power supply, comes very close to that of my very high-end Naim NDS/555PS network player, and for considerably less money.

A swift 'back of an envelope' calculation suggests that the Mac mini/Mutec-based system would bring a healthy saving of not far short of £5000 (or 280 high-res downloads). True, the interface won't be as slick, but the sonic trade-offs involved are minimal. ⏻

HI-FI NEWS VERDICT
The MC-3+ USB is excellent value, bringing clearly audible benefits with all the DACs I tested. A stripped-down version with all the word-clock connectivity removed could be an even greater steal – something for Mutec to consider as it moves further into the consumer/enthusiast market, perhaps? For now this unit, still firmly rooted in the pro market, has much to offer the serious 'computer audio' enthusiast.

Sound Quality: 88%

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LAB REPORT

MUTEC MC-3+ USB

USB data addressed to the MC-3+ is reformatted/upconverted and then passed out from up to five S/PDIF and AES outputs but data that's input to any S/PDIF connection can only be passed back to a *computer* via the USB Type B socket. Either way, USB packet data or jittered/noisy S/PDIF data benefits from the signal conditioning on offer here – compare the example bandlimited S/PDIF signal with its 23nsec risetime [red trace, Graph 1, below] to the improved edge-definition of the MC-3+'s S/PDIF output [black trace] with its 6.7nsec risetime.
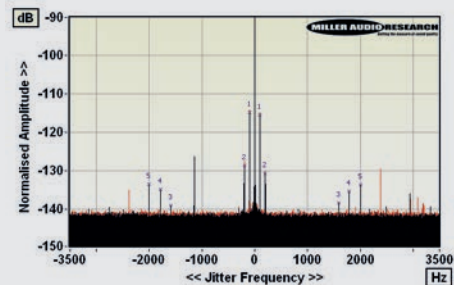
How this reduction in uncertainty, and freedom from circulating RF earth currents, impacts on the performance of the connected DAC rather depends on the sensitivity of the latter's input data receiver/data slicer and jitter suppression regimes. Oppo's fine BDP-105D universal player/DAC [*HFN* Jan '13] is illustrative, demonstrating a ~5dB reduction in noise/uncorrelated jitter and 30psec of correlated jitter with the MC-3+ inserted between PC [USB-Mutec-S/PDIF, red trace Graph 2] and onboard DAC [USB direct, black trace]. Another example urges caution, for the comparison of a USB-to-Devialet 800 connection [red spectrum, Graph 3] with a USB-Mutec-AES-Devialet connection [black spectrum] is less clear cut. Here there's no significant reduction in noise and just 10psec in correlated jitter [but see Opinion, p103]. PM
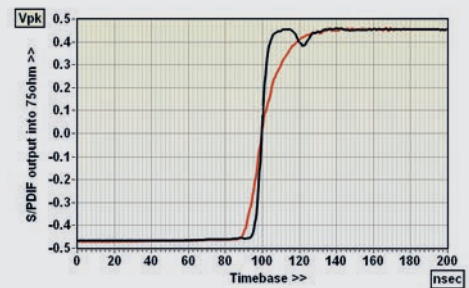
ABOVE: Bandlimited S/PDIF data 'edge' (red) versus reclocked S/PDIF output from Mutec 3+ (black)

ABOVE: 48kHz/24-bit jitter spectra (zoomed to +500Hz) from Oppo BDP-105D. USB (black) versus reclocked S/PDIF output from Mutec 3+ (red)

ABOVE: 48kHz/24-bit jitter spectra from Devialet 800. USB (red) versus reclocked USB-to-AES (black)

HI-FI NEWS SPECIFICATIONS

S/PDIF Risetime/Level	6.7nsec / 515Vp-p
Dimensions (WHD) / **Weight**	198x44x160mm / 1.35kg